The orexin receptors (hypocretin receptors) are a family of G protein-coupled receptors and consist of orexin receptor 1 (OX1R) and orexin receptor 2 (OX2R) subtypes. Orexin receptors are expressed throughout the central nervous system and are involved in the regulation of the sleep/wake cycle.

Orexin A binding to OX1R and OX2R with similar affinity, and orexin B binding to OX2 with higher affinity than OX1R. OX1R is mainly expressed in the prefrontal and infralimbic cortex, hippocampus, paraventricular thalamic nucleus, and locus coeruleus. OX2R is mainly distributed in the cerebral cortex, septal nuclei, lateral hypothalamus, hippocampus, and hypothalamic nuclei.

Both OX1R and OX2R are coupled via $G_{i/o}$ to the activation of phospholipase C, leading to an elevation of intracellular Ca$^{2+}$ levels. Moreover, OX2R also couples via $G_\alpha$ and $G_{i/o}$ to the cAMP pathways.
# Orexin Receptor (OX Receptor) Antagonists, Agonists & Activators

<table>
<thead>
<tr>
<th>Compound</th>
<th>Cat. No.</th>
<th>Purity</th>
<th>Clinical Data</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Almorexant</strong> (ACT 078573)</td>
<td>HY-10805</td>
<td>99.01%</td>
<td>Phase 3</td>
<td>10 mM × 1 mL, 5 mg, 10 mg, 50 mg, 100 mg</td>
</tr>
<tr>
<td>Almorexant hydrochloride (ACT 078573 hydrochloride)</td>
<td>HY-10805A</td>
<td>99.88%</td>
<td>Phase 3</td>
<td>10 mM × 1 mL, 5 mg, 10 mg, 50 mg, 100 mg</td>
</tr>
<tr>
<td><strong>Almorexant-13C,d3</strong> (ACT 078573-13C,d3)</td>
<td>HY-10805S</td>
<td>&gt;98%</td>
<td>No Development Reported</td>
<td>1 mg, 5 mg</td>
</tr>
<tr>
<td>Danavorexton</td>
<td>HY-133898</td>
<td>&gt;98%</td>
<td>No Development Reported</td>
<td>5 mg, 10 mg, 25 mg, 50 mg, 100 mg</td>
</tr>
<tr>
<td><strong>EMPA</strong></td>
<td>HY-108682</td>
<td>99.69%</td>
<td>No Development Reported</td>
<td>1 mg, 5 mg, 10 mg</td>
</tr>
<tr>
<td>Filorexant (MK-6096)</td>
<td>HY-15653</td>
<td>99.35%</td>
<td>Phase 2</td>
<td>10 mM × 1 mL, 5 mg, 10 mg, 50 mg, 100 mg</td>
</tr>
<tr>
<td><strong>Firazorexton</strong></td>
<td>HY-137440</td>
<td>&gt;98%</td>
<td>No Development Reported</td>
<td>1 mg, 5 mg</td>
</tr>
<tr>
<td>GSK1059865</td>
<td>HY-101534</td>
<td>99.94%</td>
<td>No Development Reported</td>
<td>10 mM × 1 mL, 5 mg, 10 mg, 25 mg, 50 mg, 100 mg</td>
</tr>
<tr>
<td>IPSU</td>
<td>HY-13796</td>
<td>98.10%</td>
<td>No Development Reported</td>
<td>10 mM × 1 mL, 5 mg, 10 mg, 25 mg, 50 mg</td>
</tr>
<tr>
<td>JNJ-10397049</td>
<td>HY-10896</td>
<td>98.72%</td>
<td>No Development Reported</td>
<td>10 mM × 1 mL, 5 mg, 10 mg, 25 mg, 50 mg, 100 mg</td>
</tr>
</tbody>
</table>

**Almorexant** (ACT 078573) is a potent and competitive dual orexin 1 receptor (OX1)/orexin 2 receptor (OX2) antagonist with Kᵢ values of 1.3 and 0.17 nM, respectively.

Purity: 99.01%
Clinical Data: Phase 3
Size: 10 mM × 1 mL, 5 mg, 10 mg, 50 mg, 100 mg

Almorexant hydrochloride (ACT 078573 hydrochloride) is a potent and competitive dual orexin 1 receptor (OX1)/orexin 2 receptor (OX2) antagonist with Kᵢ values of 1.3 and 0.17 nM, respectively.

Purity: 99.88%
Clinical Data: Phase 3
Size: 10 mM × 1 mL, 5 mg, 10 mg, 50 mg, 100 mg

Almorexant-13C,d3 (ACT 078573-13C,d3) is the 13C- and deuterium labeled Almorexant. Almorexant (ACT 078573) is a potent and competitive dual orexin 1 receptor (OX1)/orexin 2 receptor (OX2) antagonist with Kᵢ values of 1.3 and 0.17 nM, respectively.

Purity: >98%
Clinical Data: No Development Reported
Size: 1 mg, 5 mg

Danavorexton is an orexin receptor agonist.

Purity: >98%
Clinical Data: No Development Reported
Size: 5 mg, 10 mg, 25 mg, 50 mg, 100 mg

EMPA is a high-affinity, reversible and selective orexin OX₁ receptor antagonist. [³H]EMPA binds to human and rat OX₁-HEK293 membranes with Kᵢ values of 1.1 and 1.4 nM respectively.

Purity: 99.69%
Clinical Data: No Development Reported
Size: 1 mg, 5 mg, 10 mg

Filorexant (MK-6096) is an orally bioavailable potent and selective reversible antagonist of OX1 and OX2 receptor(<3 nM in binding).

Purity: 99.35%
Clinical Data: Phase 2
Size: 10 mM × 1 mL, 5 mg, 10 mg, 50 mg, 100 mg

Firazorexton is a potent orexin type 2 receptor (OX₂R) agonist (patent WO2019027058A1, example 395).

Purity: >98%
Clinical Data: No Development Reported
Size: 1 mg, 5 mg

GSK1059865 is a potent orexin 1 receptor antagonist.

Purity: 99.94%
Clinical Data: No Development Reported
Size: 10 mM × 1 mL, 5 mg, 10 mg, 25 mg, 50 mg, 100 mg

IPSU is a selective, orally available and brain penetrant OX₂R antagonist with a pKi of 7.85.

Purity: 98.10%
Clinical Data: No Development Reported
Size: 10 mM × 1 mL, 5 mg, 10 mg, 25 mg, 50 mg

JNJ-10397049 is a potent and selective orexin 2 receptor (OX₂R) antagonist, with a pKi of 8.3. JNJ-10397049 is 600-fold selective for the OX₂R over the OX₁R.

Purity: 98.72%
Clinical Data: No Development Reported
Size: 10 mM × 1 mL, 5 mg, 10 mg, 25 mg, 50 mg, 100 mg
**JNJ-54717793**

JNJ-54717793, as a brain penetrant, is an orally active, selective and high affinity orexin-1 (OX1R) antagonist (plasma EC\textsubscript{50} = 85 ng/mL). The Ki values of JNJ-54717793 for hOX1R (human OX1R) and hOX2R are 16 nM and 700 nM, respectively.

- **Purity:** 98.85%
- **Clinical Data:** No Development Reported
- **Size:** 5 mg, 10 mg, 25 mg, 50 mg, 100 mg

**Lemborexant (E-2006)**

Lemborexant (E-2006) is a reversible, competitive and orally active dual antagonist of the orexin OX1 and OX2 receptors with IC\textsubscript{50} values of 6.1 nM and 2.6 nM, respectively. Lemborexant can be used to treat insomnia.

- **Purity:** 99.92%
- **Clinical Data:** Launched
- **Size:** 10 mM × 1 mL, 5 mg, 10 mg, 25 mg

**MK-1064**

MK-1064 is a selective orexin 2 receptor antagonist (2-SORA) for the research of insomnia.

- **Purity:** 99.48%
- **Clinical Data:** Phase 1
- **Size:** 10 mM × 1 mL, 1 mg, 5 mg, 10 mg, 25 mg, 50 mg, 100 mg

**MK-3697**

MK-3697 is an isonicotinamide small molecule, acting as a potent and selective Orexin 2 receptor antagonist with Ki = 0.95 nM.

- **Purity:** 99.46%
- **Clinical Data:** No Development Reported
- **Size:** 10 mM × 1 mL, 5 mg, 10 mg, 50 mg, 100 mg

**Nemorexant (Daridorexant; ACT-541468)**

Nemorexant (Daridorexant; ACT-541468) is a potent orexin receptor antagonist extracted from patent WO2015083094A1, compound example 7, has IC\textsubscript{50} of 2 nM and 3 nM for OX\subscript{1} receptor and OX\subscript{2} receptor, respectively.

- **Purity:** 99.56%
- **Clinical Data:** Phase 3
- **Size:** 10 mM × 1 mL, 1 mg, 5 mg, 10 mg, 25 mg, 50 mg, 100 mg

**Orexin 2 Receptor Agonist**

Orexin 2 Receptor Agonist is a potent (EC\textsubscript{50} on OX2R is 23 nM) and OX2R-selective (OX1R/OX2R EC\textsubscript{50} ratio is 70) agonist. IC\textsubscript{50} value: 23 nM (EC\textsubscript{50})

- **Purity:** 99.75%
- **Clinical Data:** No Development Reported
- **Size:** 10 mM × 1 mL, 5 mg, 10 mg, 50 mg, 100 mg

**Orexin 2 Receptor Agonist 2**

Orexin 2 Receptor Agonist 2 is a selective orexin 2 agonist, extracted from patent WO2017135306A1, example 16.

- **Purity:** >98%
- **Clinical Data:** No Development Reported
- **Size:** 1 mg, 5 mg

**Orexin A (human, rat, mouse)**

Orexin A human, rat, mouse, a 33 amino acid excitatory neuropeptide, orchestrates diverse central and peripheral processes. Orexin A human, rat, mouse is a specific, high-affinity agonist for G-protein-coupled receptor OX1R.

- **Purity:** 99.15%
- **Clinical Data:** No Development Reported
- **Size:** 1 mg, 5 mg

**Orexin A (human, rat, mouse) (TFA)**

Orexin A human, rat, mouse TFA, a 33 amino acid excitatory neuropeptide, orchestrates diverse central and peripheral processes. Orexin A human, rat, mouse TFA is a specific, high-affinity agonist for G-protein-coupled receptor OX1R.

- **Purity:** 99.15%
- **Clinical Data:** No Development Reported
- **Size:** 10 mM × 1 mL, 1 mg, 5 mg, 10 mg, 50 mg, 100 mg

**Orexin B, human**

Orexin B, human is an endogenous agonist at Orexin receptor with K\textsubscript{s} of 420 and 36 nM for OX1 and OX2, respectively.

- **Purity:** >98%
- **Clinical Data:** No Development Reported
- **Size:** 1 mg, 5 mg

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Orexin B, human TFA
(Human orexin B TFA)
Cat. No.: HY-P1339A
Orexin B, human (TFA) is an endogenous agonist at Orexin receptor with $K_i$ of 420 and 36 nM for OX1 and OX2, respectively.

Purity: 98.08%
Clinical Data: No Development Reported
Size: 500 μg, 1 mg, 5 mg

Orexin B, rat, mouse TFA
(Rat orexin B TFA, Orexin B (mouse) (TFA))
Cat. No.: HY-P1349A
Orexin B, rat, mouse (TFA) TFA is an endogenous orexin receptor agonist. Orexin B, rat, mouse TFA binds and activates two closely related orphan G protein-coupled receptors OX1-R and OX2-R.

Purity: 98.49%
Clinical Data: No Development Reported
Size: 1 mg, 5 mg

Orexin receptor antagonist 2
Cat. No.: HY-136922
Orexin receptor antagonist 2 (compound 30) is a potent orexin receptor antagonist with $pK_i$ of 7.69 and 9.78. Orexin receptor antagonist 2 has the potential for the research of insomnia.

Purity: 98.04%
Clinical Data: No Development Reported
Size: 10 mM × 1 mL, 5 mg, 10 mg, 25 mg, 50 mg

Orexin receptor antagonist 3
Cat. No.: HY-137093
Orexin receptor antagonist 3 (example 216) is an orexin receptor antagonist, which is extracted from the patent WO2011050198A1.

Purity: 99.62%
Clinical Data: No Development Reported
Size: 10 mM × 1 mL, 5 mg, 10 mg, 25 mg, 50 mg

OXA(17-33)
Cat. No.: HY-P1341
OXA(17-33) is a potent and selective orexin-1 receptor (OX1) agonist. OXA(17-33) shows a 23-fold selectivity for the OX1 ($EC_{50}=8.29$ nM) over OX2 (187 nM).

Purity: >98%
Clinical Data: No Development Reported
Size: 1 mg, 5 mg

SB-334867
(SB 334867A)
Cat. No.: HY-10895
SB-334867 (SB 334867A) is an excellent, selective and blood-brain barrier permeable orexin-1 (OX1) receptor antagonist, shows selectivity over OX2 ($pK_i=7.4$), 100-fold over 5-HT$_{3A}$, 5-HT$_{3B}$, with $pK_i$ values of 5.4 and 5.3, respectively.

Purity: >98%
Clinical Data: No Development Reported
Size: 1 mg, 5 mg

SB-334867 free base
(SB334867A free base)
Cat. No.: HY-10895A
SB-334867 free base (SB334867A free base) is an excellent, selective and blood-brain barrier permeable orexin-1 (OX1) receptor antagonist, shows selectivity over OX2 ($pK_i=7.4$), 100-fold over 5-HT$_{3A}$, 5-HT$_{3B}$ with $pK_i$ values of 5.4 and 5.3, respectively.

Purity: 99.89%
Clinical Data: No Development Reported
Size: 10 mM × 1 mL, 5 mg, 10 mg, 50 mg
<table>
<thead>
<tr>
<th><strong>SB-408124</strong></th>
<th>Cat. No.: HY-70068</th>
</tr>
</thead>
<tbody>
<tr>
<td>SB-408124 is a non-peptide OX1 receptor antagonist with $K_i$ of 57 nM and 27 nM in whole cell and membrane, respectively. SB-408124 exhibits 50-fold selectivity over OX2 receptor.</td>
<td></td>
</tr>
<tr>
<td>Purity: 98.87%</td>
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<td>Clinical Data: No Development Reported</td>
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<td>Size: 10 mM $\times$ 1 mL, 5 mg, 10 mg, 100 mg</td>
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</table>

<table>
<thead>
<tr>
<th><strong>SB-649868</strong> (GSK649868)</th>
<th>Cat. No.: HY-10806</th>
</tr>
</thead>
<tbody>
<tr>
<td>SB-649868 is a potent and selective orally active orexin (OX) 1 and OX$_2$ receptor antagonist ($pK_i$ = 9.4 and 9.5 at the OX$_1$ and OX$_2$ receptor, respectively).</td>
<td></td>
</tr>
<tr>
<td>Purity: 99.35%</td>
<td></td>
</tr>
<tr>
<td>Clinical Data: Phase 2</td>
<td></td>
</tr>
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<td>Size: 10 mM $\times$ 1 mL, 5 mg, 10 mg, 25 mg, 50 mg, 100 mg</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Seltorexant (JNJ-42847922)</strong></th>
<th>Cat. No.: HY-109012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seltorexant (JNJ-42847922) is an orally active, high-affinity, and selective orexin-2 receptor (OX2R) antagonist ($pK_i$ values of 8.0 and 8.1 for human and rat OX2R). Seltorexant (JNJ-42847922) crosses the blood-brain barrier and quickly occupies OX2R binding sites in the rat brain.</td>
<td></td>
</tr>
<tr>
<td>Purity: 99.62%</td>
<td></td>
</tr>
<tr>
<td>Clinical Data: Phase 2</td>
<td></td>
</tr>
<tr>
<td>Size: 10 mM $\times$ 1 mL, 5 mg, 10 mg, 50 mg, 100 mg</td>
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<table>
<thead>
<tr>
<th><strong>Suntinorexton</strong></th>
<th>Cat. No.: HY-137452</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suntinorexton, a heterocyclic compound, is an orexin type 2 receptor agonist extracted from patent WO2019027058A1, page 288.</td>
<td></td>
</tr>
<tr>
<td>Purity: &gt; 98%</td>
<td></td>
</tr>
<tr>
<td>Clinical Data: No Development Reported</td>
<td></td>
</tr>
<tr>
<td>Size: 1 mg, 5 mg</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>TCS-OX2-29</strong></th>
<th>Cat. No.: HY-100452</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCS-OX2-29 is a potent, high affinities and selective orexin-2 receptor (OX$<em>2$R) antagonist with an $IC</em>{50}$ value of 40 nM and a $pK_i$ value of 7.5. TCS-OX2-29 displays ~250-fold selectivity for OX$_2$ over OX$_1$.</td>
<td></td>
</tr>
<tr>
<td>Purity: 99.24%</td>
<td></td>
</tr>
<tr>
<td>Clinical Data: No Development Reported</td>
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<td>Size: 10 mM $\times$ 1 mL, 5 mg, 10 mg, 25 mg, 50 mg, 100 mg</td>
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</table>

<table>
<thead>
<tr>
<th><strong>SB-408124 Hydrochloride</strong></th>
<th>Cat. No.: HY-76612</th>
</tr>
</thead>
<tbody>
<tr>
<td>SB-408124 Hydrochloride is a selective non-peptide orexin receptor 1 (OX1) receptor antagonist with $K_i$ of 57 nM and 27 nM in whole cell and membrane, respectively. SB-408124 Hydrochloride exhibits 50-fold selectivity over OX2 receptor.</td>
<td></td>
</tr>
<tr>
<td>Purity: 98.09%</td>
<td></td>
</tr>
<tr>
<td>Clinical Data: No Development Reported</td>
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<tr>
<td>Size: 5 mg, 10 mg, 50 mg, 100 mg</td>
<td></td>
</tr>
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</table>

<table>
<thead>
<tr>
<th><strong>SB-674042</strong></th>
<th>Cat. No.: HY-10898</th>
</tr>
</thead>
<tbody>
<tr>
<td>SB-674042 is a potent and selective non-peptide orexin OX1 receptor antagonist (Kd = 3.76 nM); exhibits 100-fold selectivity for OX1 over OX2 receptors.</td>
<td></td>
</tr>
<tr>
<td>Purity: 99.52%</td>
<td></td>
</tr>
<tr>
<td>Clinical Data: No Development Reported</td>
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</tr>
<tr>
<td>Size: 10 mM $\times$ 1 mL, 5 mg, 10 mg</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Seltorexant hydrochloride (JNJ-42847922 hydrochloride)</strong></th>
<th>Cat. No.: HY-109012A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seltorexant hydrochloride (JNJ-42847922 hydrochloride) is an orally active, high-affinity, and selective OX2R antagonist ($pK_i$ values of 8.0 and 8.1 for human and rat OX2R).</td>
<td></td>
</tr>
<tr>
<td>Purity: 99.94%</td>
<td></td>
</tr>
<tr>
<td>Clinical Data: No Development Reported</td>
<td></td>
</tr>
<tr>
<td>Size: 10 mM $\times$ 1 mL, 5 mg, 10 mg, 50 mg, 100 mg, 250 mg</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>TCS 1102</strong></th>
<th>Cat. No.: HY-10900</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCS 1102 is a potent, dual orexin receptor antagonist (Ki values are 0.2 and 3 nM for OX2 and OX1 receptors respectively). IC50 value: 0.2 nM (Ki, OX2 receptor); 3 nM (Ki, OX1 receptor)</td>
<td></td>
</tr>
<tr>
<td>Target: OX2 and OX1 receptor TCS 1102 (10 and 20 mg/kg, i.p.</td>
<td></td>
</tr>
<tr>
<td>Purity: 99.64%</td>
<td></td>
</tr>
<tr>
<td>Clinical Data: No Development Reported</td>
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<td>Size: 10 mM $\times$ 1 mL, 5 mg, 10 mg, 50 mg</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>TCS-OX2-29 hydrochloride (OX2R antagonist)</strong></th>
<th>Cat. No.: HY-100452A</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCS-OX2-29 (hydrochloride) is a potent, high affinities and selective orexin-2 receptor (OX$<em>2$R) antagonist with an $IC</em>{50}$ value of 40 nM and a $pK_i$ value of 7.5. TCS-OX2-29 displays ~250-fold selectivity for OX$_2$ over OX$_1$.</td>
<td></td>
</tr>
<tr>
<td>Purity: &gt; 98%</td>
<td></td>
</tr>
<tr>
<td>Clinical Data: No Development Reported</td>
<td></td>
</tr>
<tr>
<td>Size: 1 mg, 5 mg</td>
<td></td>
</tr>
</tbody>
</table>

www.MedChemExpress.com
### Vornorexant (ORN-0829; TS-142)

Cat. No.: HY-139559

Vornorexant (ORN-0829; TS-142) is a potent dual **OX1R** and **OX2R** antagonist with **IC** \(_{50}\) values of 1.05 nM and 1.27 nM, respectively. Vornorexant exhibits potent sleep-promoting effects in vivo and can be used for insomnia treatment research.

**Purity:** >98%

**Clinical Data:** No Development Reported

**Size:** 5 mg, 10 mg, 25 mg, 50 mg, 100 mg

---

### YNT-185

Cat. No.: HY-136181A

YNT-185 is a nonpeptide, selective **orexin type-2 receptor (OX2R)** agonist, with **EC** \(_{50}\) of 0.028 and 2.75 μM for OX2R and OX1R, respectively. YNT-185 ameliorates narcolepsy-cataplexy symptoms in mouse models.

**Purity:** >98%

**Clinical Data:** No Development Reported

**Size:** 1 mg, 5 mg

---

### YNT-185 dihydrochloride

Cat. No.: HY-136181

YNT-185 dihydrochloride is a nonpeptide, selective **orexin type-2 receptor (OX2R)** agonist, with **EC** \(_{50}\) of 0.028 and 2.75 μM for OX2R and OX1R, respectively. YNT-185 dihydrochloride ameliorates narcolepsy-cataplexy symptoms in mouse models.

**Purity:** >98%

**Clinical Data:** No Development Reported

**Size:** 1 mg, 5 mg

---

### [Ala11,D-Leu15]-Orexin B(human)

Cat. No.: HY-P1340

[Ala11,D-Leu15]-Orexin B(human) is a potent and selective **orexin-2 receptor (OX2)** agonist. [Ala11,D-Leu15]-Orexin B(human) shows a 400-fold selectivity for the OX2 (**EC** \(_{50}\)=0.13 nM) over OX1 (52 nM).

**Purity:** >98%

**Clinical Data:** No Development Reported

**Size:** 1 mg, 5 mg

---

### [Ala11,D-Leu15]-Orexin B(human) TFA

Cat. No.: HY-P1340A

[Ala11,D-Leu15]-Orexin B(human) TFA is a potent and selective **orexin-2 receptor (OX2)** agonist. [Ala11,D-Leu15]-Orexin B(human) TFA shows a 400-fold selectivity for the OX2 (**EC** \(_{50}\)=0.13 nM) over OX1 (52 nM).

**Purity:** >98%

**Clinical Data:** No Development Reported

**Size:** 1 mg, 5 mg